ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION,

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OUR illustration represents the "Hickory-horned devil" just as he appears when in search of a place to undergo his transformation into a chrysalis. He was found August 7th, crawling on the turnpike, by Julius F. Sachse, editor of the "American Journal of Photography," who put him on a gate-post, and did him the honor of taking his picture. We are indebted to Mr. Sachse for kindly loaning us the plate for the NEWS. "Every entomologist recognizes the difficulty experienced in attempting to preserve specimens of the larvæ of moths and butterflies; even under the most favorable circumstances the prepared specimens shrivel and lose their color. Heretofore, drawings have been made of the larva, a proceeding expensive, and often unsatisfactory. It is here where photography asserts its superiority—for example, we will take the illustration: It would be an easy matter to stop out the negative, print on heavy, plain paper, and then lightly tint with proper shades in water colors."* The reproduction is by the Ives process, the engraving by the Crosscup & West Co., and the printing by P. C. Stockhausen. We hope to give illustrations in volume 2 very frequently, and trust to receive the support of those interested in Entomology so that this may be done.

* J. F. Sachse, in the "American Journal of Photography," September, 1890.

The NEWS is supplied at such a reduced figure as to make it possible for all to subscribe. We have increased its size to twenty pages, and, should the subscription-list justify it, we will make it even larger. Nothing will be left undone toward increasing its value and usefulness. Suggestions from subscribers, indicating how it may be improved for their benefit, will be thankfully received by the Committee.—ED.

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PHRAGMATOBIA ASSIMILANS Walker.

BY ANNIE TRUMBULL SLOSSON.

About a year and a half ago I described ("Ento. Amer." May, 1889) the rediscovery, at Franconia, N. H., of this interesting species.

It will be remembered that, among Walker's types in British Museum, there are two forms under this name, marked respectively, A. and B. One of these forms is thus described (I will not apologise for repeating the description, as it has not been printed recently):

"*Male.*—Red. Antennæ testaceous. Thorax with brown hairs. Wings red, veins darker. Primaries slightly brown along the costa and elsewhere indistinctly sprinkled with pale brown; with two blackish dots. Secondaries brighter red, with three black dots, two in disc and one near hind border towards inner angle. Length of body, 6 lines; of wings, 16 lines." As I said in my former paper my moth, taken at Franconia, May, 1886, corresponds in every respect with this description, save that it is a female and larger.

Of the other form Walker says: "*Var.*—Primaries almost wholly brown. Secondaries with broad, blackish, submarginal stripe."

This last variety I was so fortunate as to capture this year at Franconia. It is, like the one taken two years before, a female, in fine condition, having evidently just emerged. It differs from the first one not only by its blackish, irregular border on hind wings, and its somewhat darker primaries, but in having two diffuse, dark, transverse lines on fore wings, which are but faintly suggested in the other. I do not find that this species of Walker's is represented in any collection, except that of the British Museum, where the types—two worn and damaged specimens, I am

told, are kept. Its rarity is, probably, to be attributed to its habitat and very early appearance. Both my specimens were taken in very cold weather, in a season in which few entomologists ever visit the mountain region of New Hampshire. The last one was found sitting on the floor of our piazza, near the light, just before midnight of the 24th of May. The thermometer at the time was below 48°, and there was still much snow on the mountains and in the woods.

I do not think that any one could examine these specimens of mine and doubt their belonging to Walker's species, which, as Prof. J. B. Smith says ("Can. Ent." xxii, 120), "has languished among the synonyms, ever since Dr. Packard referred it there in 1884." They are certainly not *rubricosa* Harris. Dr. Packard, himself, to whom entomology owes so much, and who is fairness and justice personified, would, I know, acknowledge this if he saw the two forms together. Prof. Smith, in the paper referred to above, recognizes the species on the ground, as he seems to intimate, of my rediscovery.

As the varietal form—with band on secondaries—has apparently received no name, being marked simply B in British Museum collections, and as it is a very distinct and strongly-marked form, I propose to call it *Phragmatobia franconia* n. var., and shall describe it more fully soon; with plate, if possible, under that name.

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DESCRIPTIONS OF NEW SPECIES OF AFRICAN HESPERIDÆ.

BY REV. W. J. HOLLAND.

(Continued from vol. i, p. 156.)

4. **Proteides galua** n. sp.

Upperside: Ground color dark brown, fading into slightly paler fuscous at the apex of the primaries. The thorax and the base of the wings clothed with a vestiture of greenish brown hairs. *Primaries* ornamented by a series of subapical spots, of which the one furthest from the costa is the largest. The outer third of the cell is occupied by a large trapezoidal spot. Near the junction of the second and third median nervules is a much smaller subquadrate spot, followed in the next neural interspace, between the first and second median nervules by a very large sub-

trapezoidal spot, which is succeeded between the first median nervule and the submedian vein by a small triangular spot. This last spot is followed upon the same neural interspace by a still smaller spot lying near the base, and partly concealed by the hairy vestiture. *Secondaries* ornamented by a band of five yellow spots separated by the nervures and traversing the wing for about half its diameter in a line nearly at right angles with the posterior margin. The three outermost of these spots gradually diminish toward the interior, the last two are much longer, and the band has thus imparted to it a sinuate appearance. There is also a small yellow streak in the cell partly concealed beneath the vestiture of the wing. All the spots in the anterior wing are yellow hyaline, except the small triangular spot near the base above submedian vein. This spot and all the spots in the secondaries are opaque. The fringe of the secondaries near the anal angle is white.

Underside: The *primaries* are rich maroon, interrupted on the costa at the end of the cell by a pearly gray patch, and by the hyaline spots which reappear as on the upper surface. The apex is lavender, with three oval spots of maroon on the outer margin. The posterior margin is broadly ashen gray; the costa at the base is white. The *secondaries* are dark lavender-gray, ornamented at the base by an oval spot and in the middle by a very large and irregular spot of deep maroon margined with pinkish gray; the palpi are white beneath. The thorax and abdomen are dark brown; the antennæ are dark above and light beneath, as in most of the species of this genus.

The female does not differ materially from the male, except in being larger, and the markings more sharply defined upon the underside.

Hab.—Valley of the Ogove. Types in coll. Holland.

I give this species the name *Galua* after the tribe of the Galwas.

5. **P. benga** n. sp.

Upperside: The body and wings are uniformly brown, slightly paler on the outer margin; the fringes of the secondaries are narrowly white. The middle of the primaries is adorned by a broad subquadrate band of hyaline yellow divided into three spots by the nervures. Of these three the uppermost, situated at the end of the cell, is outwardly bifid, with the tips of the bi-

furcation rounded. A round, velvety, sexual band occupies the centre of the secondaries in the case of the male.

Underside: The lower side of the wings is as the upper, save that the costa of both the primaries and secondaries is washed with ochreous. Palpi pale gray beneath.

The female does not differ from the male, except in having a small lanceolate hyaline spot on the middle of the upper side of the submedian vein in the primaries. Expanse ♀, 45 mm.; ♀, 48 mm.

Hab.—Ogove Valley, Benita. Type in coll. Holland.

I name this species after the Benga, a tribe on the mainland near Benita.

6. **P. balenge** n. sp.

One of the largest species of the genus.

Upperside: Head, thorax, abdomen and wings, rich dark brown throughout, only fading a little at the apical extremity of the primaries into paler brown. *Anterior* wings ornamented as follows: at the costa, about one-third from the tip of the wings, there is a subapical series of four small white hyaline spots, the first of which is short, the second elongated, the third like the first, and the fourth, which is slightly removed from the rest, small and quadrate. There are, further, four large yellow hyaline spots, the largest, which is quadrilateral at the end of the cell, and the other three, which are subquadrate, arranged in a series upon the limbal area, on the interspaces between the median nervules. Upon the *posterior* wings there is a triangular spot of the same color as those upon the disc of the primaries located beyond the end of the cell.

Underside: The ground color is fuscous, clouded at the base of the primaries and upon the secondaries by dark brown. The spots of the upper surface all reappear upon the lower side, and there are in addition the following markings: Upon the primaries at the base upon the costa a white spot, beyond it about one-third of the distance from the base a white mark, at the middle of the costa above the large quadrate hyaline spot in the cell two small sagittate white marks, and at the apex a series of poorly defined lunulate marks also white; upon the secondaries there are two very small and indistinct white spots at the base, one small and sharply defined spot on the disc between the costal and subcostal

nerves, a similar spot in the cell, and one like it between the second and third median nervules. The fringe at the anal angle is narrowly white; the underside of the palpi is cinereous, and the lower side of the abdomen is annulated with white. Expanse of wings 68 mm.

Hab.—Benita. Type ♀ in coll. Holland.

I name this species after the Balenge, a tribe found near Benita.

TRICHODES ORNATUS Say.

BY GEO. H. HORN, M. D.

In consequence of some correspondence lately had in reference to this insect and the apparent incredulity that two forms seen, which differ less than any two figures on the subjoined illustration, were merely varietal differences, I have thought it desirable to select a few forms illustrative of variation in two directions from the typical form.

The thorax varies in color from blue to green, through brassy and cupreous. The elytra are usually deep blue or blue-black, but may be bright blue or green. The pale bands are of a Cicindeloid type, and may be bright yellow or orange-yellow. The legs are blue, the anterior four tarsi pale, but those specimens with the wider bands of yellow often have pale tibiæ also.

On the accompanying illustration are five specimens selected from my series showing the extent of variation in the markings. The central figure is the common form in the region from which Say obtained his specimens, near the base of the Rocky Mountains. The humeral and the median band are often united along the outer side. Fig. 2 represents a form quite usual in Owen's Valley, Cal., and western Nevada, the yellow being quite equal to the blue color. Fig. 3 shows a form from Utah in which the

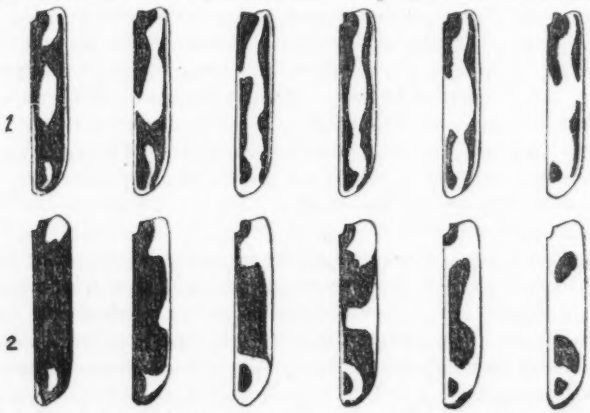
humeral and median bands have coalesced into a large pale area enclosing but slight trace of the blue in the form of a spot and two short lines. This is the most extreme form I have yet seen in the direction of the expansion of the yellow bands.

Fig. 4 represents a contraction of the bands, the humeral breaking up, while the other two do not reach the lateral margin, several specimens from Oregon illustrate this. In fig. 5 the elytra are entirely blue or green, with a small post-median spot of obliquely oval form. The spot varies in size and position, and from the indications I have no doubt that specimens will occur with elytra entirely blue. These one-spotted specimens must not be mistaken for *bisignatus*, which has quite a large spot of red color contiguous to the margin and other specific characters.

As a rule, the hotter the climate in which the specimens were native, the greater the extent of the yellow color; those represented by fig. 3 are from the extreme southwest of Utah. In colder, and especially damper climates, the blue color predominates; figs. 4 and 5 are from Oregon, although typical forms occur abundantly there also.

The variety *tenellus* is from San Diego and Fort Yuma, in California. Its form is more slender than normal, and the markings are as in fig. 2, although a little wider, showing less blue.

In continuation of the same idea I reproduce the illustrations



of the variations of the elytral markings of two species of Psoa published by me in the "Trans. Am. Ent. Soc." 1886, p. xv.

The upper line represents *P. maculata;* the lower, *P. quadrisignata.* The genus Psoa, although belonging to the Bostrichinæ, resembles Trichodes in form, the elytra having a ground color of blue or green, the markings yellowish to red. The markings of *quadrisignata* are suggestive of *Trichodes ornatus* in the fourth figure, while *maculata* is rather of a vittate type.

It is hoped that these notes and figures will be at least cautionary to those who see in slight differences of the metallic surface lustre, or the extent of markings a sure indication of a new species.

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ELEMENTARY ENTOMOLOGY.

Seventh Paper.—The Abdomen—Internal Anatomy.

The third and last region of the body is the abdomen. The abdominal segments are not so closely united to each other as are the segments of the head and the thorax; they consequently possess a freedom of motion between themselves not to be found in the two former regions of the body.

The abdominal segments sometimes receive the special name of *urites.* Their typical number is eleven (Packard), but in different insects varies from three to eleven.

Besides the three pairs of jointed legs, situated near the front end of the body, and which correspond to the (thoracic) legs of the imago, many larvæ have other thicker, fleshy legs, termed *prolegs*, *prop-legs*, or *false legs.* The prop-legs are not jointed, and end in a circle of minute hooks; they are placed on that part of the larva corresponding to the abdomen of the imago, in which state they are not usually represented. The nymphæ of those insects which undergo only an incomplete transformation have six jointed, thoracic legs. Of the larvæ that undergo a complete transformation, some have no legs, as maggots; others have six jointed, thoracic legs; others still, as caterpillars, have six jointed, thoracic legs, and from ten to sixteen jointless, abdominal prop-legs. Some of those insects which do not pass through any transformation have jointed abdominal legs; in this particular they differ from the definition of an insect as given in the first paper.

In many insects which have an incomplete transformation, there is in the nymph a pair of jointed appendages to the last

abdominal segment. These are represented in the corresponding imagos, in which state they much resemble antennæ; they are called *anal forceps*, *cerci*, or *caudal setæ*. Male insects have sometimes one or two pairs of jointless *claspers* at the apex of the abdomen. Female insects may have the abdomen furnished with a sawing, piercing, or boring organ—the *ovipositor*, by which the eggs are implanted into various substances. A *sting* is an ovipositor modified to form an organ of defence; it exists in females only, of some insects. *Cornicles*, *nectaries*, *siphuncles*, or *honey tubes*, are small tubes, two in number, found on the abdomen of plant-lice and certain other insects, through which a liquid ("honey-dew") is secreted.

With this we complete our sketch of the external anatomy of insects. Their internal anatomy is hardly an elementary study, owing to its difficulty, but from its importance it cannot be overlooked here.

If a cross-section were made of the body of a cat, or other back-boned animal, the relative positions of the main nerve (spinal) cord, the main blood vessel (aorta) and the alimentary canal would be seen to be as follows. The most dorsal of the three would be the nerve cord; below it, that is, on its ventral side, would be the main blood vessel; below the latter would be the alimentary canal, the most ventral of the three. These positions would, of course, be equally true for the human species.

But the relative positions of these three great organs in Arthropods (and consequently in insects) is different. Here the main blood vessel is the most dorsal, below it is the alimentary canal, below the latter is the nerve cord, which is here the most ventral of the three.

The body wall of an insect is made up of three (microscopic) layers,—

1. An outer chitinous layer, or *cuticle*.
2. A median cellular layer, or *hypodermis*.
3. An inner layer, or *basal membrane*.

The alimentary canal has its beginning at the mouth opening and extends as a more or less convoluted tube, divided into various parts, through the length of the body, to its external opening (*anus*) in the apex of the abdomen. The principal parts of the canal are the *pharynx*, situated within the head, connected

by the slender *œsophagus* with the *crop*, situated in the thorax, or more posteriorly. Following the crop is the *proventriculus*, or *gizzard*, a grinding organ with strong muscular walls. The *stomach*, *ventriculus*, or *chylific ventricle* succeeds, situated in the abdomen. After this is the *intestine*, which may sometimes be subdivided into three parts, the *ileum*, or small intestine (immediately following the stomach), the *colon*, or large (thicker) intestine, and the *rectum*, or terminal part. The crop and gizzard are sometimes absent.

The alimentary canal is composed of three coats, the outer, or *peritoneal*, the middle, or *muscular*, and the inner, or *mucous*. The canal is held in place by retractor muscles, but principally by exceeding numerous branches of the main tracheæ (Packard).

The appendages of the alimentary canal are the *salivary*, the *cæcal*, and the *anal* glands, and the *malpighian vessels*. The salivary glands open near the mouth. In some larvæ (caterpillars) they are the source of the silk. The cæcal glands open into the stomach ; their secretion resembles the pancreatic secretion of backboned animals. The anal glands open into the hind part of the intestine; their secretion is usually offensive and constitutes an organ of defense. The malpighian vessels are long, slender tubes opening into the fore part of the ileum; they are analogous to the kidneys of higher vessels. Insects have no true liver, its functions being performed by the walls of the stomach (Siebold quoted by Packard).

The circulatory system consists of a *dorsal vessel* or heart, an aorta, and a few branches of the latter. The heart is a jointed organ of a varying number of chambers, one behind the other, corresponding in position to the segments (of the fore part of the abdomen) in which they are situated. The chambers are separated by valves permitting motion in but one direction—from behind forwards. A pair of lateral valves in each chamber allows entrance, but prevents exit. The heart is contained in a cavity—the *pericardial sinus*, separated from the other organs by a membrane—the *pericardial diaphragm*, pierced by many openings. At its fore end the heart opens into the aorta, a simple tube running to the head where it may or may not divide into short branches. In either case the vessels apparently end in the head as open tubes. The circulation is believed to be as follows: By the successive contraction of the chambers of the heart, the

blood is forced forwards from the hind into the fore chambers and thence into the aorta. When the blood reaches the end of blood vessels in the head it passes from them directly into the body cavity, bathing the internal organs, flowing in regular currents, but not enclosed by walls. Finally, it passes through the openings of the pericardial diaphragm, and enters the heart through the lateral openings of the chambers.

The blood consists of a usually colorless, or sometimes yellowish, greenish, or reddish liquid, in which float colorless, sometimes nucleated corpuscles. P. P. C.

Additions and Corrections to the list of Dragonflies (Odonata) of Manchester, Kennebec Co., Maine.

BY MISS MATTIE WADSWORTH.

(See ENTOMOLOGICAL NEWS vol. i, pp. 36, 55.)

1*a*. **Calopteryx æquabilis** Say.

1890, June 21, one ♂ taken near brook.

6*a*. **Enallagma ebrium** Hagen.

A single ♂ taken several years ago, recently identified.

6*b*. **Enallagma civile** Hagen.

One ♂, also recently identified.

16*a*. **Neuræschna vinosa** Say.

1890, August 11, one ♂ flying over brook.

18*a*. **Gomphus** (Undetermined species).

One ♀ taken several years ago.

32. This species given as "**Cordulia** new? species" is **C. cynosura** variety.

1890, June 21, one ♀, one ♀, near brook. June 28, one ♂ in pasture.

37*a*. **Plathemis trimaculata** De Geer.

1890, June 18, 21, ♂ ♂ seen near woods; 28, one ♀ in woods; June 30, July 2, 18, 29, near woods, brook and roadside. August 4, one ♀ in woods.

43. **Diplax** new? species is **D. ornata** Ramb.

1890, July 9, one ♂ by roadside; August 6, one ♂ in meadow; August 7, one ♂, three ♀ ♀ in pasture; August 12, one seen flying; August 20, one ♂ in pasture.

44. **Diplax semicincta** Say.

One ♂ taken some time ago, recently identified.

The total number of species from Manchester known to me, including the undetermined *Gomphus*, is now fifty species. Of these two are Calopterygina, eleven Agrionina, seven Æschnina, eight Gomphina, nine Cordulina, thirteen Libellulina.*

As before each species has been identified by Mr. Philip P. Calvert, of Philadelphia, who has given me much assistance in the study of the Odonata.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

[The Conductors of ENTOMOLOGICAL NEWS solicit, and will thankfully receive item of news, likely to interest its readers, from any source. The author's name will be given in each case for the information of cataloguers and bibliographers.]

In the future all papers received for publication in the News will be printed according to date of reception.

☞ **See change of wording in notice of Identification of Insects.**

WE give as a supplement to the present number an exchange list, which will save the entomologist the trouble and labor of making out written lists, either of duplicates or desiderata, to send to correspondents. Numbers are also unsatisfactory, as they have to be copied from a list and referred to a list by the recipient. The editor has often been in need of such a list, and thus it originated. All that is necessary is to mark the list and put it in an envelope and send it on its way, hoping thereby to receive many fine additions to one's collection.—ED.

ALETIA ARGILLACEA Hüb.—*Apropos* of a note on this insect in the December number of ENT. NEWS (p. 154) by Prof. Killicott, I wish to state that *argillacea* has been very rare the past season, if indeed it has appeared at all, at Buffalo, N. Y. About October 1st, when it should be most abundant, I was frequently out after moths, but failed to detect a single example of this species.—E. P. VAN DUZEE.

We have recently heard from Mr. Wm. H. Ashmead, who writes from No. 11 W. Alvensleben Strasse, Berlin, that he is having a good time studying the large collections in the Museum. "The collection of exotic Lepidoptera is simply grand, and, for a lepidopterist, is simply a paradise. The Hymenoptera, especially in the micros, are poorly represented, but I find a good many interesting forms in what they have among the macros."

* In a letter dated November [11th, 1890], accompanying the MS. of the above "Additions," Miss Wadsworth writes: "Some species quite common before have been much less so this season, particularly *Anax junius*, which, in 1889, was one of the most common species. This year I saw but one specimen, and that on June 30th." So far as my observations go, this remark is also true for the relative abundance of *junius* in Delaware County, Pa., in 1889 and 1890.—PHILIP P. CALVERT.

MR. C. W. JOHNSON'S report of capture of *Neonympha Mitchellii* at Dover, N. J., in rocky and hilly territory, leads me to make a correction as to its habits in Michigan. When first found I took only a few specimens, and all on a rather dry meadow, near a wet meadow and marsh. Since then I find that they are much more common in the marshy portion of the territory referred to. I have taken many specimens of *Neonympha Canthus*, *N. eurytris*, *N. sosybius* and *N. Mitchellii*,—the *sosybius* in Florida—and find *Mitchellii* much closer to *sosybius* in habits of flight than to either of the others. It flies low, for short distances, in a weakly manner, and is best started by beating up, or by walking rapidly and noisily through the grass. *Sosybius* is stronger and quicker on the wing, is a more "artful dodger," and flies a little farther. If there is more than one brood of *Mitchellii* in a season, the last one begins to fly July 1st. I have taken it from July 1st to 10th. As far as I can tell it comes in quickly and goes off the field rather abruptly after a short period of life.

I. N. MITCHELL.

DEVELOPMENT OF DIBOLIA ÆREA.—The habits of this little beetle appear to be familiar, but the following notes on its period of development may be of interest: The larvæ were found abundantly on Plantain (*Plantago major*) at LeClaire, Iowa, about Aug. 1, 1890. They make an opening in the epidermis of the leaf which they enter, gradually eating their way. Sometimes a larva makes a tunnel, then goes back and starts a branch to it. If the leaf becomes too dry, some will leave and enter a fresh one, but in ordinary cases they remain in their leaf until they are ready to pupate. When full grown they are 3–4 mm. in length. The period of pupation is fourteen days. Up to the twelfth day the pupa is yellow, on that day a slight coloring of the eyes is noticed, the following day the tarsi become black, and the fourteenth day the beetle appears, becomes entirely black and begins to move about. Eight beetles lived five days after emergence without food; after Plantain leaves were introduced they ate freely.—P. H. ROLFS, Ames, Ia.

I HAVE observed this past season an unusual number of the larvæ of *Sphinx quinquemaculata* on the tomato vines. In the Summer of 1881 they were a veritable pest in this locality, but since then they were scarce, only an occasional isolated specimen being found until the late Summer, when they were again abundant. The country people are very much afraid of them, and one frequently hears extravagant tales of horrible suffering from the effects of their sting.

I find the observations made relative to the limited range of *Satyrus alope* (January number) corroborated by my own knowledge of the species in this locality as I have observed the same individuals in the same locality until they died.

On August 12th I took a larva of *C. regalis* feeding on a plum tree; I fed it plum leaves for a week when it pupated. This is, to me, a new food-plant for *C. regalis*, as I have never found it on any thing but the walnut.—STEPHEN BALDY, Catawissa, Pa.

Identification of Insects (Imagos) for Subscribers.

Specimens will be named under the following conditions: 1st, The number of specimens to be unlimited for each sending; 2d, The sender to pay all expenses of transportation and the insects to become the property of the American Entomological Society; 3d, Each specimen must have a number attached so that the identification may be announced accordingly. Twelve names, if possible, will appear in each issue of NEWS, according to number. Address packages to ENTOMOLOGICAL NEWS, Academy Natural Sciences, Logan Square, Philadelphia, Pa.

H. MEESKE.—1, *Cicindela 16-punctata;* 2, *Cicindela vulgaris,* var.; 3, *Macrodactylus subspinosa;* 4, *Cicindela pusilla,* var. *cyanellus;* 5, *Epitragus canaliculatus;* 6, *Necrophorus marginatus;* 7, *Chrysochus auratus;* 8, *Trox sonoræ;* 9, *Hippodamia convergens;* 10, *Chrysomela scalaris.*

E. WILKINSON.—2, *Carpophilus palilpennis;* 4, *Sphærophthalma orchis;* 5, *Bombus pennsylvanicus* ♂; 6, *Orthosoma brunneum;* 7, *Necrophorus americanus;* 8, Solpugidæ (belongs to); 9, *Allorhina nitida?* 10, *Eleodes longicollis;* 11, *Hippomelas cælatus;* 12, *Psiloptera dilaticollis.*

CHAS. FUCHS.—1, *Eleodes hispilabris;* 2, *E. carbonaria,* smooth var.; 3, *E. quadricollis* ♀; 4, *E. obsoleta,* var.; 5, *E. carbonaria,* var. *soror;* 6, *E. extricata;* 7, *Discogenia marginata;* 8, *Eleodes cordata;* 9, *E. consobrina;* 10, *E. cordata;* 11, *E. parvicolis;* 12, *E. obscura.*

G. D. B.—1, *Catocala concumbens;* 2, *Clenucha virginica;* 3, *Microcælia obliterata;* 4, *Heliophila unipuncta;* 5, *Hadena sputatrix;* 6, *Agrotis messoria?* 7, *Plusia contexta;* 8, *Eustrotia carneola;* 9, *Hypena* sp.; 10, *Tetracis crocallata;* 11, *Pyrophila pyramidoides;* 12, *Metanema quercivoraria.*

From Haddonfield, N. J., wingless females of a Geometrid moth, perhaps genus *Anisopteryx.*

Entomological Literature.

BULLETIN FROM THE LABORATORIES OF NATURAL HISTORY OF THE STATE UNIVERSITY OF IOWA, vol. ii, No. 1, contains the continuation of the monograph entitled, "The Pselaphidæ of North America, by E. Brendel, M.D., and H. F. Wickham (concluded), 85 pp., 3 plates, 63 figs. Full descriptions with synoptic tables of the species are given.

THE ENTOMOLOGIST, November, 1890.—Additions to the British List of Deltoids, Pyralids and Crambi since 1859 (with plates), by Richard South. The sexes of LEPIDOPTERA, by T. D. A. Cockerell. Contributions to the Chemistry of Insect Colors, by F. H. Perry Coste. Entomological notes, captures, etc. Doings of Societies.

THE ENTOMOLOGIST'S MONTHLY MAGAZINE, November, 1890.—How do Coccids produce cavities in Plants? by W. M. Maskell. Notes on the LEPIDOPTERA of Digne (Basses Alpes), by A. H. Jones. Entomological

notes from Aden and Colombo, by J. J. Walker. Notes concerning Psocus *quadrimaculatus* Latreille, of which *Ps. subnebulosus* Steph. is a synonym, by Robert McLachlan. Aculeate HYMENOPTERA collected by J. J. Walker at Gibraltar and in North Africa, by Edw. Saunders. Notes and Captures, Doings of Societies, etc., finish the number.

TRANSACTIONS OF THE ROYAL SOCIETY OF SOUTH AUSTRALIA vol. xiii, pt. 1.—Descriptions of Australian LEPIDOPTERA, pt. 1, by E. Meyrick. Further notes on Australian COLEOPTERA, by Rev. T. Blackburn.

A CONTRIBUTION TOWARD A KNOWLEDGE OF THE MOUTH PARTS OF THE DIPTERA, by Prof. J. B. Smith (from Trans. Am. Ent. Soc.). This is an interesting essay of twenty pages with twenty-two figures; very little has been written on the anatomy of the mouth parts of DIPTERA, and Prof. Smith's paper is an important addition to the literature of the subject. He states that he studied each organ in its entirety, in its relation to others, and in its development, and that the studies were morphological rather than anatomical.

THE ENTOMOLOGIST'S MONTHLY MAGAZINE, December, 1890.—Notes on the British species of the genus *Anthonomus*, with a description of a species new to Britain, by Rev. Canon Fowler. Hymenopterological notes, by P. Cameron. Description of a new species of the genus *Phanæus*, by B. S. Nevinson. Trichoptera observed in the Exmoor District in Autumn, by R. McLachlan. Observation on some British and exotic Coccidæ, by J. W. Douglas. Descriptions of two new species of *Euplœa* from the South Sea Islands, by Hamilton H. Druce. Great flight of *Culex*, *Tipula* and *Tetramorium* in New Zealand, by W. W. Smith. Meyrick's Pyralida of Europe, by Prof. C. H. Fernald. *Trypeta bigeloviæ* n. sp., by T. D. A. Cockerell. On a new species of *Tomoderus* from Japan, by G. C. Champion. Note on the genus *Dischidus*, id. *Bidessus unistriatus* in East Norfolk, id.; *Anisotoma triepkei*, etc., at Aviemore, by R. W. Lloyd. *Danais archippus* at Eastbourne, by A. H. Clarke. *Chœrocampa nerii* near Dartmouth, by Henry F. Owen. Description of the larva of *Phoxopteryx upupana*, by B. A. Bower. Insects in the Scilly Isles, by C. W. Dale.

BULLETIN No. 11, November, 1890, Iowa Agricultural Experiment Station. The Potato Stalk Weevil (*Trichobaris trinotata*). The Apple Curculio (*Anthonomus 4-gibbus*). A new Currant Borer (*Hyperplatys aspersus*). The life-histories and remedies against these injurious insects are given (illustrated). These entomological articles are by Prof. C. P. Gillette.

WE have received the following from Prof. C. V. Riley, U. S. Entomologist: Insecticides and Means of Applying them to Shade and Forest Trees, by C. V. Riley, M.A., Ph.D. The Insectivorous Habits of the English Sparrow, by C. V. Riley. Insects Affecting the Hackberry (various species of *Celtis*), by C. V. Riley. These entomological papers are all from various government publications.

ANNALS OF THE NEW YORK ACADEMY OF SCIENCES, vol. v, Nos. 456. —Coleopterological Notices, by Capt. Thos. L. Casey. This is the continuation of a lengthy paper containing descriptions of many new species (pp. 97 to 198). Catalogue of LEPIDOPTERA found within fifty miles of New York City, with their food plants, by Wm. Beutenmüller. This is a useful list, as it considers Rhopalocera and Heterocera, both macro and micro, and will be a guide to collectors in the territory covered.

MEMOIRS AND PROCEEDINGS OF MANCHESTER LITERARY AND PHILOSOPHICAL SOCIETY, vol. iii, fourth series. HYMENOPTERA Orientalis, or contributions to a knowledge of the HYMENOPTERA of the Oriental zöological region, by P. Cameron, pt. 2, pp. 239–284, 2 plates; contains new genera and species.

OPUSCULA ENTOMOLOGICA, C. G. Thomson, xiv, Fasciculus. Lund, 1890; xlii, Cremastius and allied genera;* *Demophorus* n. gen.; xliii (synopsis of the genus *Bassus* Fab.*), *Zootrephus*, *Promethus*, *Homoporus*, n. gen., xliv, Contribution to the Insect Fauna of Sweden,* Coleoptera and Hymenoptera.

ENTOMOLOGISKE MEDDELELSER UDGIVNE AF ENTOMOLOGISK FORENING VED FR. MEINERT. ANDET BIND, HEFTE TREDIE [and] FJERDE. KJOBENHAVN, 1890.—This publication being in Danish, is beyond the Reviewer. Hefte Tredie (part 3) contains a biologic and anatomic paper on *Anthophora parietina* Fabr. by C. Wesenberg-Lund, 1 pl.

L'AUXILIAIRE, ORGANE LIBRE DE LA FEDERATION DES APICULTEURS FRANCAIS, Amiens 2e Annee, Nouvelle serie, Nos. 2–9, February–September, 1890.—The issues of this paper contain many articles on all subjects of interest to those engaged in Bee culture, as well as on other topics not relating to entomology. Of entomological articles other than those on apiculture, we note one on "The Flies of the Pears" (*Cecidomyia nigra* and *Sciara piri*) by E. André.

COMPTE-RENDU. SOCIETE ENTOMOLOGIQUE DE BELGIQUE, 4 Oct. 1890. —Note on the Cicindelidæ of Chota-Nagpore,* by E. Fleutiaux. Note on some Spherionidæ,* by A. Lameere. First note on the Coleoptera collected by M. Ed. Van Beneden in South America, by P. Pelseneer.

REVUE BIOLOGIQUE DU NORD DE LA FRANCE, 3e Annee, No. 2, November, 1890.—Notes on the Thysanoura, iv, by R. Moniez. Materials for the Entomological fauna of Flanders, 4th century, Coleoptera, by A. P. de Borre.

ANNALEN DES K. K. NATURHISTORISCHEN HOFMUSEUMS, v, No. 3, Wien, 1890.—The Hymenopterous group of the Sphecinæ. I. Monograph of the natural genus *Sphex* L. (sens. lat.) II. Abtheilung, by F. F. Kohl (see ENT. NEWS, vol. i, p. 164). Ichneumonid studies,* by Dr. J. Kriechbaumer; *Apechoneura*, *Opisorhyssa*, *Rhyssonota*, *Dyseidopus*, new genera of Pimplidæ; *Thalessa? histrio*, White Mountains; *Opisorhyssa flavopicta*, N. Amer.?; new species from North America.

* Contains new species other than North American.

LE NATURALISTE (Paris), Nov. 15, 1890.—Habits and Metamorphoses of *Larinus ursus* Fab., by Capt. Xambeu. On the horn of a chrysalis of *Deilephila euphorbiæ*, by P. Chretien; with woodcuts.

A SYNONYMIC CATALOGUE OF NEUROPTERA ODONATA, OR DRAGONFLIES. With an appendix of fossil species, by W. F. Kirby, F.L.S., F.E.S., etc. London, Gurney & Jackson; Berlin, R. Friedländer & Son, 1890, 8vo, pp. ix, 202. Price, 16s. ($4.00)

This important work, although published early in September, 1890, was not seen by the reviewer until Dec. 6, 1890. A review of it has been published (in French) by Baron de Selys Longchamps in his "Causeries Odontologiques," No. 2 (Compte-Rendu. Soc. Ent. Belg., Sept. 6, 1890, pp. clvii–clxiv; see ENT. NEWS, vol. i, p. 164), which has been seen by the present reviewer.

Pages 1–164 of the catalogue contain the living species, giving the synonymy, the chief bibliographical references and the general distribution of each species. Appendix I, pp. 165–176, does the same for the fossil species. Appendix II, pp. 177–187, comprises additions and corrections. A general index of all the specific and generic names, both accepted and synonymic, completes the work.

The following table shows the classification adopted, with the number of genera and species listed, including the additions and corrections, as collected by the reviewer:

	Living species throughout the world.		Fossil species throughout the world.		Living species in N. America north of Mexico.	
	Genera	Species	Genera	Species	Genera	Species
Family 1. LIBELLULIDÆ.						
Subfamily 1. Libellulinæ.....	102	503	3	26	16	67
" 2, Corduliinæ.....	22	144	1	2	7	37
Family 2. ÆSCHNIDÆ.						
Subfamily 1. Gomphinæ.....	....	....	10	30	....	....
Division 1. Gomphina	36	228	....	....	8	48
" 2. Cordulegastrina.	15	38	....	....	4	9
Subfamily 2. Æschninæ.....	25	112	2	12	6	24
Family 3. AGRIONIDÆ.						
Subfamily 1. Agrioninæ..... (= Calopterygina auct.)	33	234	3	6	2	18
Subfamily 2. Cœnagrioninæ...	....	....	7	27	....	....
Div. 1. Pseudostigmatina....	5	20	....	....	....	....
" 2. Normostigmatina....	77	561	....	....	12	56
	315	1810	26	103	55	259

Baron de Selys has already pointed out that Mr. Kirby makes a number of changes in the names of well known genera and species, chiefly on the ground of priority. To these Baron de Selys strongly objects; his views

are entirely in accord with those of the present reviewer, who thinks that they will be adopted by Odonatists generally. The chief changes, so far as they affect North American dragonflies, are as follows: the first in each pair of names being the one used by Mr. Kirby. *Sympetrum* = *Diplax*, *Lib. lydia* Dru. = *trimaculata* DeGeer, *Lib. vibrans* Fabr. = *lydia* Dru. Hag., 1851), *Diastatomma* = *Ophiogomphus*, *Aeshna* (without *c*) = *Gomphus*, *Aeschna* (with *c*) retained = *Aeschna*, *Agrion* = *Calopteryx*, *Micronympha* = *Ischnura*, *Cœnagrion* = *Agrion*. Even if it be a fact that many of the changes here noted rest on a priority of a few years, inasmuch as the names to be supplanted have been in general use for many (in some cases over fifty) years, it seems to the reviewer totally unnecessary to change them. The rule of priority may be very good in the abstract, but when it conflicts with that better rule of long and common use, it is more to be honored in the breach than in the observance. For himself, the reviewer proposes to continue using the old nomenclature until more convincing reasons for changing are presented.

In spite of these serious faults, this Catalogue is a most useful and valuable work. It furnishes us, in a commodious form, with a key to our present knowledge of the Odonata, both living and fossil. The most excellent index at the end of the volume affords a ready means of locating any name which has been proposed in this group of insects. Finally, no student of the Odonata can do without it.—PHILIP P. CALVERT.

ENTOMOLOGISCHE NACHRICHTEN, xvi, No. 19, October, 1890.—New Ichneumon flies from north and middle Germany,* by Dr. Kriechbaumer. On *Hylemyia penicillaris* Rnd. and some similar species, by P. Stein. *Pelecium Drakei*,* n. sp. of the Coleopterous tribe of the Stomidæ, by G. Quedenfeldt; from Matto-Grosso, S. America. No. 20, October, 1890. —Entomological notes, by Prof. Dr. F. Thomas (on *Chionea*, *Niptus*, *Chrysopa*, *Leiosomus*, *Byturus*). On *Ornithomyia turdi* Latr., and on the author of *Bibio anglicus*, V. v. Roder. Victor Antoine Signoret, by L. Fairmaire. No. 21, November, 1890.—A contribution to the German Hymenopterous Fauna,* by C. Verhoeff.

Doings of Societies.

A Regular Meeting of the Entomological Section of the Academy of Natural Sciences was held Oct. 23, 1890, Director Dr. Horn in the chair. Members present: Ridings, Laurent and Skinner. Associates: Fox, Westcott and Dr. Castle. Dr. Stephens, of Plymouth, Mass., visitor. A paper entitled, Mouth Parts of Diptera, by Prof. J. B. Smith, was presented and referred to the Publication Committee. Dr. Horn referred to his studies on Throscidæ and Eucnemidæ for the Biologia Centrali-Americana. The material had been received on April 15th and the corrected proof returned October 15th. The completed work will make sixty-five quarto

* Contains new species other than North American.

pages. He also spoke of a contemplated work on Agrilus. Mr. Ridings mentioned the fact that whiskey attracted ants, and that they were intoxicated by it. Dr. Horn spoke of the habits of *Xyleborus pyri*, a beetle which bores in fruit trees. He had found *pyri* identical with the European *X. dispar*, having compared them side by side. A number of fine additions have been lately made to the Cabinet of the Society, among them forty-two specimens of Noctuidæ, representing thirty-one species new to the collection, presented by Mrs. A. T. Slosson. A number of fine Hesperidæ from Mr. Martindale, and a collection of Hymenoptera and Diptera from Mr. Ernest Seeber, all collected in his own yard.

Meeting held Nov. 27, 1890. Director Dr. Horn presiding. Members present: Martindale, Laurent and Skinner. Associates: Welles and Johnson. Dr. Horn described the results of his studies on *Aræoschizus* and *Cryptohypnus*. The genus *Aræoschizus* is composed of small and rare beetles about the size of ants, and look much alike. The forms of head, elytra, etc , were described and illustrated. *Cryptohypnus* is represented by small Elater-like beetles which have been in confusion on account of the characters not being well understood. The differential diagnoses based on anatomical differences were considered. The relationships of the European and American species were discussed. Dr. Horn did not consider any of them identical, but parallel species. He also stated that he had discovered two new species of *Eleodes* with long tails to the elytra, although belonging to different groups. One had a peculiar male character of the tibia which was described. The nomination of Mr. Charles S. Welles as a member was read. Mr. David Jayne Bullock was duly elected a member of the Section.

Meeting held Dec. 8, 1890. Dr. Horn in the chair. Members present: Martindale, Blake, Laurent, G. B. Cresson, Skinner. Associates: Calvert, Welles, Dr. Castle, Fox. The Director announced the death of Dr. Samuel Lewis. Mr. Martindale exhibited his new form of cabinet drawer for LEPIDOPTERA with the upper and underside of glass, and having movable strips for pinning on the specimens. This gives the opportunity to examine the underside of the specimens without removal (see NEWS, vol. i). Mr. Calvert exhibited a female of *Libellula pulchella* with an imperfectly developed wing. A drawing on the blackboard was made illustrating the puculiarities in venation. The specimen had been loaned to him by Mr. C. W. Johnson, and was taken in the upper part of the city. He also stated that in 1865 Mr. Scudder reported dragonflies in great abundance at Hermit Lake, in the White Mountains. On a visit there, himself, he did not find them nearly as plentiful as stated by Mr. Scudder. It was of interest to compare the different collecting experiences after an interval of twenty-five years. Kirby's Catalogue of the Odonata of the world was exhibited and commented on. The question of priority was discussed as set forth in the list. Dr. Skinner exhibited some fine specimens of entomological photography, the work of Mr. J. F. Sachse, editor of the "American Journal of Photography." The following were elected

officers to serve for the coming year: Director, Dr. G. H. Horn; Vice-Director, H. C. McCook, D.D.; Treasurer, E. T. Cresson; Recorder, Henry Skinner, M.D.; Publication Committee, Philip Laurent and Henry Skinner, M.D.; Corresponding Secretary, Angelo Heilprin; Conservator, Dr. Henry Skinner.

ENTOMOLOGICAL SOCIETY OF WASHINGTON, Nov. 6, 1890.—Mr. Erwin F. Smith was elected a member of the Society.

Mr. Schwarz exhibited a larva of the genus *Carabus* with deformed maxillary palpi. The right palpus is normally formed, except that the suture between the first and second joints is nearly obliterated; the left palpus is only 3-jointed, with the joints nearly transverse, as in *Calosoma*.

Mr. Marlatt exhibited three female specimens of a species of the Tryphonid genus *Metopius*. The strikingly large and peculiar ovipositor of this species was described, and reference was made to the literature relating to this genus, from which it appears that the female has never been properly characterized, if indeed it has ever been described at all.

Dr. Marx gave some additional notes on his experiments with the bite of *Lathrodectus*, but stated that the results had been wholly negative.

Mr. Howard read a paper entitled, "The Habits of Pachyneuron," in which he referred to the breeding records of this genus of Chalcididæ, recording twenty distinct rearings in North America, and made a number of interesting deductions therefrom.

Mr. Schwarz read a paper on the food habits of *Corthylus punctatissimus*. This Scolytid, previously known to infest the subterranean part of the stems of Sugar Maple saplings, was found in large numbers in the roots and subterranean stems of the common huckleberry, *Gaylussacia resinosa*, in the vicinity of Washington during September and October. In this connection Mr. Schwarz presented the description of a second North American *Corthylus*, *C. spinifer*, from semi-tropical Florida.

Mr. Marlatt presented a paper on the Final Molting of Tenthredinid Larvæ, in which he described the molting undergone by the larva of nearly all saw-flies after full growth is reached and just prior to spinning up or entering the ground to pupate, describing also the accompanying change of color. Reference was made to the scanty literature of the subject and the explanation of this molt by Cameron on the ground of protection.

Mr. Townsend read a paper on the Leptid (Dipterous) genera *Triptotricha* Lw. and *Agnotomyia* Will. Mr. Townsend does not believe that the species of *Triptotricha*, with only one front tibial spur, should, without other distinguishing characters, be generically separated from those possessing two.

Mr. Fernow called attention to the ravages of *Gastropacha monacha*, particularly in Bavaria, stating that it has probably been introduced in the present instance from Italy.

General discussion followed on a novel method employed in Europe of collecting and destroying this Bombycid.

C. L. MARLATT,
Recording Secretary.

EXCHANGE LIST.

BUTTERFLIES OF AMERICA NORTH OF MEXICO.

Compiled by Dr. HENRY SKINNER.

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  d marginata
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californica

Apatura

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antonia
  a montis
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  c galactinus
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carus
cernes
cestus
chusca
colorado
columbia
comus
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deva
dion
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ethlius
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harpalus
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  a viridis
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pittacus
pontiac
pratincola
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ruricola
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snowi
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uncas
verna
verus
vestris
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simius
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nessus
oceanus
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  a montivagus
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Nisoniades

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funeralis
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lucilius
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hippalus
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proteus
pylades
simplicius
tityrus
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Erycides

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batabano
sanguinea
texana
urania

Pyrrhopyga

araxes

Megathymus

cofaqui
neumœgenii
yuccæ
  a coloradensis